



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

STUDY ON VALUATION OF PLANT AND MACHINERY –A CASE STUDY OF WHEEL ALIGNMENT AND BALANCING MACHINE

Mr. Mahesh Shaligramji Rathi*1, Mr Amol K. Raundal*2

Affiliation*1,2: SOET, Sandip University, Trimbakeshwar Road, Mahiravani, Nashik (M.S), India

Abstract: Equipment valuation is necessary to determine the market value of machinery, facilities, devices, assemblies, instruments needed for proper production process. As there are many types of equipment there are also various approaches used for its valuation. Professional independent valuation of equipment is one of the most important and quite often the only possible way to determine the real value of a company's fixed assets. Manufacturing equipment; Manufacturing lines; Machine-tools, units; Office machines, appliances and equipment; Computers; Inventory and other types of equipment. Specialists during evaluation of equipment enables to calculate its value as precise as possible. Besides external examination, detailed evaluation of condition and operability of equipment, machinery, computers, etc. The objective of this is to identify the market value of plant and machinery properties for purpose To Assess the Fair Market Value of Wheel Balancing Machine. This study helps owner to know the actual condition of industry and simplify the finance amount of the property. The valuation of the property helps the owner of the property to know the actual rate of the property.

Keywords - Methodology, Industrial Property, Field practice, Valuer, Valuation, Market Value, Finance.

I. Introduction

The goal of the valuation Process is to produce an unbiased opinion of value showing that the appraiser has considered all factors that may affect the value of the equipment. The American society of appraisers (ASA) through the machinery Technical Specialties (MTS) committee formulated a valuation process that conforms to the uniform standards of professional Appraisal practice(USPAP)

Valuation can be defined as the process of estimating value. Value of the property depends on the circumstances of the case such as structure, life, maintenance, location, etc. Valuation of firms and projects is the core topic in business and finance. Valuation is carried out basically for financial activities in the economy i.e. Investment, buying and selling, loan and mortgage etc.

A property valuation is an inspection carried out to help determine the current market value of a property. It is usually undertaken by an estate agent or an independent valuer, typically acting on the instructions of the vendor or a lending institution who are considering funding its purchase. Buyers may also request a property valuation if they are considering purchasing a property, in addition to structural surveys that assess its physical condition.

Before providing a mortgage or refinancing, a lending institution (such as a bank) may request a valuation to ensure the loan can be covered by the security value of the property. This gives them with the confidence to lend the capital, knowing that if the mortgage goes unpaid, they can recover any outstanding amount by re-selling the property.

Preferred licensed property valuers tend to be used by lending institutions. Estate agents tend to conduct property valuations for sellers of the property. The valuation provided by an estate agent and that provided by a licensed valuer may be different. This is because estate agents are working for the vendor (i.e. the seller), and receive commission based on the price that the property is sold at. They may, therefore, be more optimistic in their assessment of the property's worth than a licensed valuer who is legally responsible for the information provided by them, so must produce their valuation based on facts and accurate up-to-date data.

It is important that sellers ensure the property is in as clean and tidy a condition as possible prior to the valuation, as this can have an impact, as can the state and style of decorations, furnishings, and so on.

A property valuation is typically produced as a report and, in addition to photographs and plans may contain the following information:

- Age of the machine/equipment.
- A description of the construction of the industry.
- Size of the land and building for the industry.
- Utilization of the machine.
- Details of fixtures and fittings.
- Physical condition, wear and tear, etc.
- Details of any issues that need addressing.
- Deterioration due to environmental conditions.

- Comparative sales in the area.
- Use class and extant permissions such as planning permission.
- Development plans that might change the value of the property in the future.
- Impairment of functional capacity.
- Efficiency of the machine.
- Power Consumption of the equipment.
- Raw Material availability.

In order for the valuation to be as fair and accurate as possible, a property will typically be compared with other similar properties in the local area. Valuers will examine planning restrictions, by-laws, council zoning, and so on. Factors such as local infrastructure, reputation and attractiveness of the neighborhood, market demand, and amenities (e.g. schools, hospitals, green spaces, and so on), will also be taken into consideration.

II. DEPRECIATION

Methods of Depreciation and How to Calculate Depreciation:

In Accounting, there are various methods for calculating depreciation. A company can adopt any of these methods of calculating depreciation depending on its needs. Some of the methods for calculating depreciation are:

- Straight-line method
- Written down Value method
- Annuity method
- Sinking Fund method
- Production Unit method

So let us study the methods of calculating depreciation in detail.

Straight-line Method

The straight-line method of depreciation is the most simple and easy to use depreciation method. It is the most commonly used method of depreciation. It is also called the Original cost method, Fixed Installment method or Equal Installment method. Under this method, the depreciation calculation is done by deducting the residual value from the Cost of the asset and then the amount is divided by the number of years the asset was used for or its useful life. The same amount of depreciation is charged every year on the original cost of the asset. The amount of depreciation is charged to the Profit and Loss Account every year. For better understanding, we have given the straight-line depreciation formula.

Straight-line Method Formula is:

$$\text{Depreciation Formula: } \frac{\text{Cost of Asset} - \text{Residual Value}}{\text{Useful life of the Asset}}$$

$$\text{Depreciation Rate Formula: } \frac{\text{Amount of Depreciation}}{\text{Original Cost of the Asset}} \times 100$$

Written Down Value Method

The written down value method also known as diminishing balance method or reducing balance method is a method of calculating depreciation in which a fixed percentage of depreciation is charged on the reducing value of the asset every year. While calculating depreciation in the diminishing balance method, the salvage value of the asset is not taken into consideration. The amount of depreciation decreases every year under this method. The diminishing depreciation method is calculated by the formula:

$$\text{Depreciation, reducing balance method: } \frac{\text{Rate of Depreciation}}{100} \times \text{Book Value}$$

$$\text{Calculation of depreciation rate under diminishing balance method: } 1 - (s/c)^{1/n} \times 100$$

Where, S is the scrap value of the asset

C is the cost of the asset and n is the useful life of the asset.

Some companies or organizations also use the double-declining balance method, which results in a large amount of depreciation expense. Double declining balance method is a type of diminishing balance method in which the depreciation factor is 2X than the straight-line method.

Double Declining Balance Method Formula:

$$\text{Depreciation} = 2 \times \text{SLDP} \times \text{BV}$$

Where, SLDP is Straight-line Depreciation Percentage

BV is Book Value

Annuity Method

The annuity method of depreciation calculates depreciation on the asset by calculating its rate of return. This method considers the asset as an investment. It takes into consideration the internal rate of returns on the cash outflows and inflows of the asset.

Depreciation cost formula under the annuity method is:

$$\text{Depreciation} = (\text{Cost of the Asset} - \text{Residual Value}) \times \text{Annuity factor}$$

	Wheel Alignment and Balancing Equipment	Present day Replacement value of identical M/C					Assessed fair Market Value As on 2022
Sr.	Description	Qty	Unit Price	Total Amount	Age	Expected Life	
		(Nos.)	(In Rs.)	(In Rs.)	(In Years)	(In Years)	
1	ATPL 3D Pro Wheel Aligner +Digital Balancer+ Automatic Tyre Changer(2&4 Wheeler With RFT Adapter)	1	4,50,000	4,50,000	5	12	262500
2	Air Compressor 2HP	1	35000	35000	5	12	20417
3	Fully Automatic N2+Air	1	58000	58000	5	15	38667
4	Impact Wrench and Recoil hose,Adapter,Frl set	1	15000	15000	5	10	7500
5	3.5ton Hydraulic Jacks	2	10000	20000	5	8	7500
6	Tools& Spanners General Tool Kit	1	10000	10000	5	10	5000
7	Balancing Weights(5-50Grams),Sticker Weights, Tubeless tyre Repair kit, Tubeless valves, dust caps, valve dies,ventifix,Kwik repair Seals	1	12000	12000			0
8	Axle Stands	4	750	3000	5	12	1750
9	CVT(Servo Stabilizer for Aligner &Balancer)	1	7000	7000	5	12	4083
10	Software	1	30000	30000	5	12	17500
	Total			6,40,000			3,64,917
	Less obsolescence factor **@ 7.5 % - on Rs: 364917/- OBSOLESCENCE FACTOR** With the rapid technological development Modern day Machines with advanced Features and latestdesign are more precise, faster in production, economical in working, less labour oriented and more reliable. As such an Obsolescence factor of 7.5% has been adopted to arrive at the fair Asset Value						43790
							3,21,127

Sinking Fund Method

The Sinking fund method of depreciation is a method of calculating depreciation where enough amounts is accumulated at the end to replace the asset at the end of its useful life. Here the amount of depreciation is charged to a sinking fund account which is invested in various government bonds and securities. The interest earned from these securities is used to replace the asset.

Sinking Fund Depreciation Method Formula:

Depreciation Value Formula: (Cost of the asset - Residual value) X Present value of Rs. 1 at sinking fund tables for a given rate of interest

Production Unit Method

The Production unit method takes into consideration the number of units that the machine has produced in a year. The depreciation cost depends on how much the machine or asset has been used over a year. The amount of depreciation formula under this method is:

$$\text{Depreciation} = \frac{\text{Estimated Total Cost} - \text{Residual Value}}{\text{Estimated Total Output}} \times \text{Actual Output during the year}$$

III.CASE STUDY : Valuation of Wheel Alignment & Balancing Machine

BASIS OF VALUATION

1.This refers to assess the Fair Market Value of Wheel Alignment and Balancing Machine. This study helps owner to know the actual condition of industry and simplify the finance amount of the property. The valuation of the property helps the owner of the property to know the actual rate of the property. The Equipment's are of reputed 'Make' and have been found well maintained and in satisfactory working condition.

2.Column No.4 shows the replacement value of a new and almost identical Machine. This is the price one is required to incur if Equipment having almost identical specification is procured as on date of valuation. This has been arrived at adding the basic price (as given by supplier/manufacturer with the freight and transit insurance charges and also includes the installation expenses).

3.Column No.5 shows the age of machine and Col. No.6 in the report shows its expected Useful working life-depending on the plant-load duty and the overall condition. The Estimated Useful life of a Machine/Equipment is the period/duration of time the asset is productively employed. The Equipment may be operated even beyond the estimated Useful life-which is known as its "Physical Life"-but only at a heavy maintenance cost, high fuel/energy consumption and unreliable output because of frequent breakdowns.

For calculating depreciation, straight line method of depreciation has been adopted, a suitable and reasonable usable future expected life of Equipment has been presumed after giving strictly due consideration to its actual present day overall operating condition, maintenance, extent of wear sustained owing to the nature of plant duty and the formula used to arrive at the depreciation is as:

$$\text{Depreciation "F"} = \frac{\text{Age in year}}{(\text{Age in year} + \text{Future life expectancy in years})} \times 0.90^*$$

* Salvage value has been considered as 10%

Total Depreciation = Replacement Value x F

And, Fair Assessed Value = (Replacement Value - Total Depreciation)

IV. RESULT AND DISCUSSION:

As a result of thorough inspection, appraisal and analysis and taking into consideration present day replacement cost of similar machines, their general overall condition, upkeep and other factors such as age, obsolescence and economy of operation-viz-a-viz latest and new items incorporating improved design/ technique, in my considered opinion, Fair Market Value of machines under reference as on date works out as Rs 3.21 lakhs (Three Lakhs twenty one thousand rupee Only).

V. CONCLUSION:

- This project is done for understanding the valuation process of plant and machinery in guidance of Mr. Amol Raundal my project guide.
- This project gives the knowledge of calculating the Fair Market Value of the property.
- The assessment of the Fair Market value was carried out at asset level. The aggregate of the individual Fair Values presented here takes account of the marketing period and the transaction costs of the individual assets and does not reflect any discounts or premiums on the sales of the whole portfolio or if part of the portfolio were to be marketed simultaneously or in lots.
- The age of company is approx. 5 years This Machine is Located in the well-known Area.
- To Assess the Fair Market Value of oil manufacturing plant.
- There are no negative values to the report.

VI. REFERENCES

- [1] Nasirov E. & Masimdjanova M. "The Analysis Of Approches And Methods For The Valuation Of Machinery And Equipment".
- [2] Emenike Kingsley Chikwuado, Ezeudu Christian Uchenna "The Place Of Plant And Equipment Valuation In South Eastern Nigeria Issues Challenges And Prospects".
- [3] Mikail Olayiwola Olaniran "Adequacy of Valuation Practical Knowledge among HND II Students In The Department Of Estate Management And Valuation, The Federal Polytechnic Ilaro, Nigeria".
- [4] Farquarul Ariffin Abdullah, Kamaruzzaman Muhammad "Factors Influencing Property, Plant And Equipment Valuation In Public Sector Financial Statements: Accountants' Perspective".
- [5] B. Aware Satish, P. Shitre Nikita, S. Sarak Snehal, V. Basavantbagade Vinaya "A Review on Valuation of Building, Vehicles, Plants and Machinery".
- [6] Akinwande, T. O. and Umeh, O. L. "An Evaluation of Valuers' Approach to Depreciation in Plant and Machinery Valuation in Lagos State, Nigeria".
- [7] Amjadh Iftikhar & Kaneeka Vidanage "Valuation of Used Vehicles: A Computational Intelligence Approach".
- [8] Babayev Mehdi & Elsever Ibadov "Valuation Of Property, Plant And Equipment".
- [9] Abdul Rahman Mohd Nasir and Professor Chris Eves "The Need for Standardisation of Plant and Machinery Valuation Practices in Malaysia".
- [10] T. A. Ashaolul "Valuation of Machinery and Equipment: is it Inter- Disciplinary, Multi-Disciplinary or Collaborative?"
- [11] Benedetto Manganelli, Pierluigi Morano and Francesco Tajani "The market value of in use industrial machinery".
- [12] Marko Popović, Radomir Slavković, Peđa Perišić "Valuation of the Construction Machinery Using the Market Approach".
- [13] Namso Bassey Udoekanem "Students' Perception of the Teaching and Learning of Plant and Machinery Valuation in a Nigerian University".
- [14] Abdul Rahman Mohd Nasir, Chris Eves And Yusdira Yusof "Education on Plant and Machinery Valuation for the Real Market: Malaysian Practicality".
- [15] Rowland Jo Ekeocha "Machinery and Equipment Valuation".
- [16] T.J. Erinle, O.K. Ukoba and O.M. Adesusi "Evaluation of Plant and Machineries: Case Study of PZ Nigeria".
- [17] Don Herrmann, Shahrokh M. Saudagaran, and Wayne B. Thomas "The Quality of Fair Value Measures for Property, Plant, and Equipment".
- [18] Sze, S I (2006) "The Role Of Premise Of Value In Plant & Machinery Valuation". Paper for Wavo Valuation Congress, Singapore, November 2006.
- [19] Dr. S. Balamuruga "Total Quality Management (TQM) modeling of Project assessment for Valuation".
- [20] Ogunba, Olusegun & Ogunniyi, Kehinde "Physical Depreciation Modelling In the Use of Depreciated Replacement Cost For the Valuation of Plant and Machinery".
- [21] F.H. Gruen "An Estimate of Depreciation of Farm machinery and structures based on historical cost".